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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/607,629	06/27/2003	Jae-Hyun Ryou	15436.440.12	8741

22913 7590 12/13/2006

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EXAMINER

NGUYEN, TUAN N

ART UNIT PAPER NUMBER

2828

DATE MAILED: 12/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/607,629	Applicant(s) RYOU ET AL.	
	Examiner Tuan N. Nguyen	Art Unit 2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 October 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 8-13 and 19-28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 14-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08/24/2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

***DETAIL ACTIONS***

1. With respect response file 9/14/2006, Applicant elects invention Group I – 1-7, 14-18, and Figure 5 without traverse.

Group 2, 8-13, 19-26 was not elected and should state as “cancel”. Claims 27, 28 also depends on the method claim 19, should also be stated as “cancel”.

**Claim Rejections – 35 USC 112**

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claim 1 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, as required by MPEP 2173.05(i) in relation to Negative Limitations where specification did not distinctly disclose the structure and reason why the usage of the dielectric layer comprising a non-aluminum dielectric is needed.

**Response to Arguments**

3. Applicant's remark filed 9/14/2006 have fully considered but they are not persuasive. Applicant pointing out claim 1 has been amended and require “ ‘dielectric layer... comprising a non-aluminum dielectric material...’ and support for this limitation can be found in Application at p. 13, lines 8-13 and p. 13, line 24- p.14, line”. The examiner has read the following pages and lines however, examiner found no positive limitation of the non-aluminum as claimed by the

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Applicant. In accordance with MPEP 2173.05(i) Negative Limitations sought are set forth need to be clear and positively recited in the specification, and the claim require to comply with the requirements of 35 U.S.C. 112, second paragraph. Any claim containing a negative limitation which does not have basis in the original disclosure should be rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

### DETAILED ACTION

#### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of 35 U.S.C. 102(b) which forms the basis for all obviousness rejections set forth in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 5 are rejected under 35 U.S.C. 102(b) as being unpatentable Jewell (US 5719891).

With respect to claim 1 Jewell '891 shows and discloses a vertical cavity surface emitting laser (VCSEL) comprising: a first mirror (*Fig 5c: 82*); an active area situated above said first mirror (*Fig 5c: 86*); a dielectric layer situated above said active area and defining an electrically confining aperture, the **dielectric layer comprising** non-aluminum dielectric material (*Fig 5c: non-oxidizing layer 26 non-aluminum (GaAs/GaPSb...) and an oxidize layer 28 comprising Al*); and a second mirror above said dielectric gain guide (*Fig 5c: area above dielectric current blocking layer #26*).

With respect to claims 2, 5 Jewell '891 shows and discloses the first mirror situated above the substrate and said substrate comprises InP or GaAs (Col 7: 1-5 substrate may comprise of GaAs, InP, InAs)(Col 9: 51-55).

6. Claims 3, 4, 6, 7, 14-18 are rejected under 35 U.S.C. 102(b) as being unpatentable Jewell (US 5719891) in view of Nurmikko et al. (US 6233267).

With respect to claims 3, 4, 6, 7 Jewell '891 discloses the above. The claims further requires wherein said non-aluminum dielectric material provides optical confinement and selected from the group consisting of SiO<sub>2</sub> and combination thereof. Jewell '891 did not discreetly disclose the non-aluminum dielectric provides optical confinement. Nurmikko et al. '267 discloses a VCSEL where current blocking layer exists between the DBR where current blocking layer is made of SiO<sub>2</sub> use in constrict current flow and align optical path in the laser device (Col 6: 15-28). It would have been obvious to one of ordinary skill in the art to provide Jewell '891 the current blocking layer consists of SiO<sub>2</sub> as taught or suggested by Nurmikko et al. '267 to constrict current flow and align optical path in the laser device.

With respect to claim 14, Jewell '891 shows and discloses vertical cavity surface emitting laser for providing laser light comprising: first reflecting means, situated above a substrate, for reflecting light; active means, situated above said first reflecting means, for converting current to light (Fig 5c: 82, 86 DBR/mirror on top of active layer, where input current via electrode oscillate active/QWM to light); and second reflecting means, situated above said confinement means, for reflecting light (*Fig 5c: 2<sup>nd</sup> DBR area above dielectric current blocking layer #26*)

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(Fig 5c: *non-oxidizing layer 26 non-aluminum (GaAs/GaPSb...)*). The claim further requires the *confinement means comprises* a dielectric material selected from the group consisting of SiO<sub>2</sub>, TiO<sub>2</sub>, SiN, and combinations thereof. Jewell '891 did not discreetly disclose *confinement means comprises* a dielectric material selected from the group consisting of SiO<sub>2</sub>, TiO<sub>2</sub>, SiN, however Jewell '891 did disclose (Col 9: 48-51 current confinement means 204 may comprise for example, ion implants – which meet the limitation a dielectric material selected from the group consisting of SiO<sub>2</sub> or *combinations thereof; and* it is inherent that semiconductor material are made of SiO<sub>2</sub>). Furthermore, Nurmikko et al. '267 also discloses (Col 6: 15-28 the use of SiO<sub>2</sub> current blocking layer to constrict current and optical flow). It would have been obvious to one of ordinary skill in the art to provide Jewell '891 the current blocking layer consists of SiO<sub>2</sub> as taught or suggested by Nurmikko et al. '267 to constrict current flow and align optical path in the laser device.

With respect to claims 15, 16 the claim further requires first means for reflecting comprises first distributed Bragg reflector layers including one or more materials that are at least nearly lattice matched with the substrate and wherein said second reflecting means comprises second distributed Bragg reflector layers. Jewell '891 shows and discloses the second reflecting means is a DBR and the DBR/mirror comprising of oxidize layers typically AlGaAs, AlGaP, etc. while the substrate may comprise GaAs, GaP etc. (Col 6: 55-67)(Col 7: 1-15 layers composition)(Col 2: 50 DBR mirror). It is inherently obvious, since the first mirror, substrate or active means can have similar doped material such as GaAs, GaP, AsSb, PSb, etc. they have a near lattice matched.

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With respect to claims 17, 18 Jewell '891 shows and discloses the first mirror situated above the substrate and said substrate comprises InP or GaAs (Col 7: 1-5 substrate may comprise of GaAs, InP, InAs)(Col 9: 51-55).

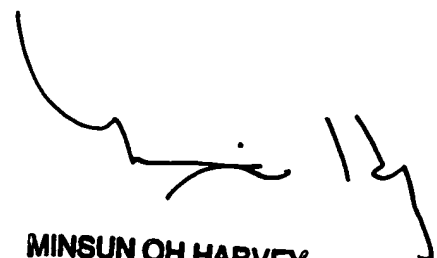
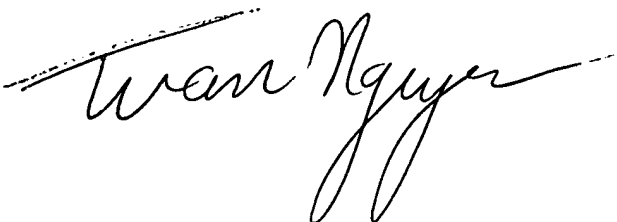
***Communication Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan N Nguyen whose telephone number is (571) 272-1948. The examiner can normally be reached on M-F: 7:30 - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harvey Minsun can be reached on (703) 308-16741. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tuan N. Nguyen



**MINSUN OH HARVEY  
PRIMARY EXAMINER**